Ashdown Project
Sylvia Underground Molybdenum Mine

Environmental Assessment
May 2006

APPENDIX 4

Transportation Spill Prevention and Emergency Response Plan

Including:

Attachment 1: Flowsheet
Attachment 2: Estimating Reportable Spills
Attachment 3: Spill Response Technical Memorandum No. 1: Spill Event
Attachment 4: Spill Response Forms

APPENDIX 4 – SPILL PREVENTION & EMERGENCY RESPONSE PLAN

GPMI has taken special steps in the planning and design of the proposed Morris Mill and Sylvia Mine small-scale processing facility to limit environmental risk associated with potential unplanned discharges or spill events. This discussion outlines contingency procedures which would be implemented by the company in the event unplanned spills or discharges of hazardous chemicals or diesel fuel situations were to occur. Attachment 1 summarizes appropriate/ mandatory response actions and procedures.

Spill Prevention and Transportation Plan

All primary process chemicals and laboratory reagents to be used for the project are listed below. They are divided into major and minor constituents. Minor constituents have limited use on site an/or present low hazard to workers and the environment. Material Data Safety Sheets (MSDS) will be available for all on-site reagents and chemicals. All major constituents will have a spill response and cleanup strategy clearly specified. These materials include sodium cyanide (small quantity for flotation cleaner), fuel oil, alcohol, flocculant, and sodium hypochlorite. MSDS are included later in this section for: sodium cyanide, sodium hypochlorite, calcium hydroxide, ethanol, hydrochloric and nitric acids.

List of Major Process Chemicals

- Fuel Oil
- NaCN (small quantity for flotation cleaner)
- Alcohol
- Activated Carbon
- Hydrated Lime $Ca(OH)_2$ for pH control and concentrate thickening
- Flocculant (tailings thickening) .
- Sodium Hypochlorite

List of Minor Chemical Reagents

- Nitric Acid
- Hydrochloric acid
- Bleached Wheat Flour
- Isopropyl Alcohol
- Acetone.
- Sodium Hydroxide
- Silica Sand
- Bone Ash

- Pre-mixed Assay Flux
- 1000 ppm Molybdenum AA Standard
- 1000 ppm Gold AA Standard
- Potassium Nitrate
- Soda Ash
- Lead Foil
- Gold Metal
- Silver Metal
- Herman Inquart

GPMI will also implement a Spill Prevention and Emergency Response Plan (SPERP), as part of this Plan of Operations. The objectives of the plan are:

1. Reduce the potential for accidental spills.
2. Provide information to properly respond to a spill.
3. Define responsibilities and notification procedures.
4. Minimize or eliminate environmental impacts and health hazards.

GPMI will ensure that all transporters of fuel or hazardous materials are familiar with the contents of this plan. GPMI will stipulate that shippers comply with all current rules governing the transportation of hazardous materials and petroleum products, and have an emergency spill response plan in effect as part of their supply contracts. Transport vehicles will be inspected for leakage entering and leaving the mine and mill facilities. Precautions will be taken during onsite material transfer to prevent spillage or accidental ignition.

Spill response and clean-up is a responsibility of the shipper. However, GPMI has agreed to assist the County Fire Department and local Emergency Response Committee in responding to spills of materials in Humboldt County. GPMI personnel will be trained in spill containment, neutralization, clean-up, and first aid techniques.

The following are emergency planning measures which apply to transport of oil/petroleum products and hazardous materials:

- Safety inspections will be conducted of all transport vehicles by the suppliers before travel to the mine.
- All fuel shipments will be in authorized supply trucks.
- Hazardous liquids will be transported in containers meeting NDOT specifications.
- All transport of fuel and hazardous materials shall occur in daylight hours.
- Trip delivery logs and copies of the spill plan shall be available upon request by the BLM and NDEP.
- Maximum speed is 30 miles per hour when transporting materials to the mine and millsites.
- Warning and information signs shall be placed along the major access routes of the mine.

A minimum inventory of spill response supplies will be kept at the site. This inventory shall include: rolls, sheets, and sweeps (oil absorbents), first aid supplies, protective rubber boots, eyewear and jackets; shovels, axes, and fire extinguishers, Plug-n-Dike material posts and hay bales will also be available at the sites. General spill response objectives and procedures include:

- Safeguard life and property.
- Notify the proper authorities.
- Begin containment and cleanup.
- Follow-up with reporting.

Potential Accidental Spill Response Strategy

For the purposes of this Plan of Operations, a "spill event" means any discharge of deleterious material or oil into waters of the State of Nevada. Chemical spills could involve sodium cyanide, sodium hypochlorite, diesel fuel, or other deleterious chemicals used by GPMI at the minesite. Oil or fuel spills may also require emergency response. A major and mandatory spill event is described as a spill of sodium cyanide and/or other "deleterious material" in quantities which threaten human or aquatic life, or livestock and/or wildlife. A sodium cyanide spill is a discharge of cyanide bearing wastes to the environment (land or water), which exceeds 10 mg/l free cyanide. A diesel oil "spill" is defined as a discharge exceeding 55 gallons. Reportable spill quantities are listed in Attachment 2 for a number of materials which could be used at the minesite, as required under CERCLA. Attachment 3 describes the various levels of "spill events", and required emergency responses.

The following discharge response strategy is outlined by GPMI and will apply to all its employees and suppliers:

- A spill of any possibly deleterious material requires immediate action. A copy of this Spill Prevention and Emergency Response Plan will be provided to all employees as part of the normal pre-hire orientation.

- All employees will be trained under the current Mine Safety & Health Administration (MSHA) requirements. New employees will receive site and job specific training covering procedures for counteracting spills of possible deleterious agents which may be used at the project. All employees will receive annual refresher training which will cover accidental spill response strategies and procedures.

- This plan outlines procedures to be followed in the event of an accident or spill related to the handling of deleterious materials. The intent of the spill response strategy for specific chemicals is to identify proper first aid procedures to be used in case of emergency, identify potential health hazards (fire, toxic gases, etc.) and provide procedures to be used in dealing with the spill. Employees will be taught that actual field conditions must be taken into account when dealing with a spill. Field conditions may require additional measures or changes in the procedures outlined below.

- The general procedures to be taken in the event of a spill are as follows:

  Objective: Safeguard life and property.

- ✓ Notify immediate supervisor; if spill occurs in route to the mine, contact appropriate law agency.
- ✓ The Supervisor must notify the Project Manager or his designated representative at the minesite.
- ✓ The Project Manager or his representative shall notify appropriate governmental agencies.
- ✓ First priority is to contain the spill.
- ✓ Fill out Standard Spill Report Form (included as Attachment 4).

- In the event of an accidental spill or leak of sodium cyanide, the following steps are to be taken:

  <u>Objective: Ensure Personal safety.</u>

  - ✓ Do not breathe dust, mist, or HCN (hydrogen cyanide) gas.
  - ✓ Avoid contact with eyes, skin or clothing.
  - ✓ Use self-contained breathing apparatus if necessary.
  - ✓ Use rubber gloves.

  <u>Objective: Administer First Aid and Implement Security Provisions.</u>

  - ✓ Remove injured or exposed persons from immediate spill area.
  - ✓ Administer first aid.
  - ✓ Secure, flag or block off 50 feet in all directions.
  - ✓ Evacuate area.

- Symptoms of cyanide poisoning (Note: only very small amounts of NaCN used):

  - ✓ Reddened eyes
  - ✓ Irritated throat
  - ✓ Palpitations, difficult breathing
  - ✓ Numbness or weakness in arms or legs
  - ✓ Nausea, headache
  - ✓ Collapse, convulsions

- First aid procedures for cyanide poisoning:

  - ✓ Move victim to fresh air.
  - ✓ If fully conscious, give oxygen.
  - ✓ If unconscious or not fully conscious, give amyl nitrite and oxygen immediately.
  - ✓ If not breathing, give amyl nitrate and oxygen immediately.
  - ✓ Remove contaminated clothing and wash skin.
  - ✓ Lay victim down and keep warm, watch for 1-2 hours.
  - ✓ If swallowed and conscious, induce vomiting and give amyl nitrate and oxygen.

- ✓ If swallowed, give victim two glasses of 1% sodium thiosulfate or plain water.
- ✓ Transport to hospital or emergency medical facility.

- In the case of fire or explosion:

  - ✓ Containers may explode in the heat of a fire.
  - ✓ Move containers away from fires if possible.
  - ✓ If containers are opened or burned, water may be used to put out the fire; this will cause cyanide runoff (NaCN dissolves in water).
  - ✓ Contain any runoff (dikes) and detoxify with calcium hypochlorite.
  - ✓ Do not use CO_2 (carbon dioxide) to put out fire; CO_2 reacts with cyanide to produce HCN gases if moisture is present.
  - ✓ For small fires use Halon, water spray, standard or dry chemical.

- Notification of immediate supervisor or the shift foreman:

  - ✓ Supervisors report directly and without delay to the Project Manager.
  - ✓ In the event that the Project Manager is not at the site, the Manager's designated representative shall have full, complete, and unlimited authority to respond to the spill.
  - ✓ It shall be the Project Manager's or designated representative's responsibility to immediately respond to the incident, to take any additional corrective action that is deemed necessary, and to notify all appropriate governmental agencies of the spill.

- Containment procedures:

  - ✓ Enter spill site from upwind, use HCN detector if available.
  - ✓ Ventilate closed spaces before entering.
  - ✓ Do not touch spilled material, stop leak if possible but do so without risk.
  - ✓ Sweep up and shovel cyanide into a covered container or plastic bag for later disposal.
  - ✓ If raining, covering the spill will reduce the solution of sodium and reduce runoff.
  - ✓ DO NOT put water directly on leak or spilled cyanide as poisonous HCN gases will be released.
  - ✓ After cleanup, flush spill area with a dilute solution of sodium or calcium hypochlorite (household bleach).
  - ✓ Place or build dikes completely surrounding any liquid spills.
  - ✓ The contaminated material will be excavated to the extent practical and places within the tailings facility.

- In the event of an emergency, GPMI pill response protocol requires official communications and statements with the media, outside organizations and

individuals to be handled by the Project Manager or other individual appointed by him.

- In the event of an accident, spill or leak, of hydrogen peroxide or sodium hypochlorite (NaCN oxidant) the following steps are to be followed:

    - ✓ Personal Safety:
        - Maintain personal safety.
        - Avoid contact with eyes, skin and clothing.
        - Use self-contained breathing apparatus.
        - Remove injured or exposed persons from immediate spill area.
        - Administer first aid immediately.
        - Evacuate area as soon as possible.
    - ✓ Characteristics and hazards of hydrogen peroxide:
        - It is a clear, colorless liquid with a slightly pungent odor.
        - Strong oxidant coming in contact with other material, may cause fire.
        - Inhalation of vapors may cause severe irritation of the respiratory system.
        - Contact with skin or eyes may cause severe irritation or burns.
    - ✓ First aid procedures:
        - Move victim to fresh air.
        - Call a physician.
        - If swallowed, do not induce vomiting.
        - If conscious, give large amounts of water.
        - If not breathing, give artificial respiration.
    - ✓ Fire or Explosion:
        - Strong oxidant coming in contact with other material may cause fire (i.e. peroxide or hypochlorite).
        - Move containers away from fire if possible.
        - Use water spray for extinguishing media.

- In the event of an accident, spill or leak, of petroleum products (gasoline, diesel, oil), the following steps are to be followed:

    - ✓ Personal safety procedures:
        - Maintain personal safety.
        - Avoid sources of ignition.
        - Avoid contact with eyes, skin and clothing.
        - Use self-contained breathing apparatus and protective fire fighter’s clothing.
        - Remove injured or exposed persons from immediate spill area as soon as possible.
        - Administer first aid once clear of spill area.
    - ✓ Characteristics and hazards of these materials:

- May be poisonous if inhaled or absorbed through skin.
- Vapors may cause dizziness or suffocation.
- Contact may irritate or burn skin and eyes.
- Flammable/combustible material may be ignited by heat, sparks, or flame.

✓ First aid procedures to be implemented:
- Move victim to fresh air.
- If not breathing, give artificial respiration.
- If breathing is difficult, give oxygen.
- Remove and isolate contaminated clothing and shoes immediately.
- In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes.
- Keep victim quiet and maintain normal body temperature.
- Effects may be delayed; keep victim under observation.

✓ Fire or explosion risks:
- Withdraw from the spill area IMMEDIATELY in case of rising sound from venting safety device or any discoloration of fuel/ oil tanks due to fire.
- Move all combustible materials away from fire.
- Cool containers that are exposed to fire with water (note: water may be ineffective in extinguishing fires).
- For small fires use dry chemical, CO_2, Halon or standard foam.
- Build dikes to contain runoff.

Logging and reporting procedures for an accidental spill are outlined in Attachment 4, which also provides reporting forms. Form 3 describes cleanup, mitigation and disposal needs. Form 4 describes emergency signing procedures. Form 5 outlines a response audit and update system. This will ensure that response efficiency is measured and the plan is updated as necessary.

GPMI will have a designated emergency response leader (Project Manager) who will be trained to standards prescribed by the Mine Safety and Health Administration. All employees will have training in spill response in the event the Project Manager is not onsite. Reporting procedures depend on the severity of the spill but may include other company personnel, NDEP, State of Nevada Law Enforcement., BLM and other individual state and federal agencies.

This spill response strategy outlines measures to be in place to prevent spills of reagents and other materials used in the ore processing facilities and at the Sylvia underground mining operation. It also describes techniques to be employed to clean up any accidental spills.

ATTACHMENT 1. FLOWSHEET FOR GOLDEN PHOENIX MINERAL, INC. SPILL PREVENTION AND EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PROCEDURES FOR HANDLING AN ACCIDENTAL SPILL INCIDENT

HAZARDOUS MATERIAL

⇩

CALLER

1. Report Incident

⇩

CHEMTREC / NSP

Contacted at GPMI Mine Mngr's Discretion for Information/Input :

CHEMTREC - (800) 424-9300

NV St Police: *647
Humboldt Co. Sheriff: 775-623-6419
NDEP – Phone 775-687-4670
BLM – Phone 775-623-5100

⇩

MANUFACTURER

1) Manufacturer contacted
2) Manufacturer supplies pertinent information
3) Decision made on who will supply support
4) Manufacturer may supply clean-up equipment

⇨

EMERGENCY RESPONSE

2. GPMI Mine Mngr.
3. Gathers Information
4. Complete preliminary information on incident report form (see forms attached)
5. Contact and transmit information to:
   a. Humboldt Co. Sheriff - Phone
   b. Nevada State Police - Phone
   c. NDEP - Phone
   d. BLM – Phone
   f. BLM Fire Center (if fire) - Phone
6. Team dispatched to site of incident
7. Verbally notify agencies if spill amount is equal to or greater than reportable quantity (see Attachment 1).

NDEP: 775-687-4670
NDEP emergency spills 775-687-4240
NDEP after working hours phone: 775-687-5300
BLM 775-623-5100

8. Notify local residents
9. National Response Center – 1-800-424-8802 Decisions made on need to request medical or fire fighting support unit

⇩

CLEAN-UP PROCEDURES

8. Corrective action procedures implemented by clean-up team according to Spill Prevention & Emergency Response Plan:
   - Chemical spills
   - Waste treatment by-pass
   - Oil spills
9. Additional assistance requested as necessary
10. Disposal activities completed, report and sent to NDEP and BLM
11. Incident Report Form completed and sent to NDEP and BLM
12. Response activities and performance reviewed by NDEP and BLM; GPMI procedure modification memorandum developed as necessary (see forms attached)

ENVIRONMENTAL EMERGENCY RESPONSE TEAM LEADER

GPMI Mine Mngr.

Earl Harrison
775-964-2335

⇩

ENVIRONMENTAL COORDINATOR

Other designated GPMI Personnel

Name: Wayne Colwell
Phone: 775-853-4919

Initiate all spill related activities

⇩

ENVIRONMENTAL EMERGENCY RESPONSE TEAM

(Designated GPMI Onsite and "Other" Personnel)

Name: Ben Viljoen
Phone: 775-941-0255

(name)_____
(phone)_____

(name)_____
(phone)_____

RTR Resource Management, Inc.
Rick Richins
(phone) (208) 343-8727

⇦

ATTACHMENT 2.
Golden Phoenix Minerals, Inc. - Sylvia Mine Project .
Estimating Reportable Spills

The following table lists materials and their CERCLA reportable quantities for materials that may be on site. The reportable quantity is for a 24 hour period. These quantities are required to be reported to NDEP and BLM (Winnemucca District).

Solid sodium cyanide	10.0	Pounds.
Cyanide solution @ 50 ppm CN	12000.0	Gallons.
Cyanide solution @ 75 ppm CN	8000.0	Gallons.
Cyanide solution @ 100 ppm CN	6000.0	Gallons.
Cyanide solution @ 125 ppm CN	4800.0	Gallons.
Sulfuric acid 100%	1000.0	Pounds.
Sulfuric acid 100%	65.4	Gallons.
Hydrochloric acid 100%	5000.0	Pounds.
Hydrochloric acid 100%	365.9	Gallons.
Nitric acid 100%	1000.0	Pounds.
Nitric acid 100%	79.8	Gallons.
Solid sodium hydroxide	1000.0	Pounds.
Sodium hydroxide solution 50%	239.7	Gallons.
Chlorine	10.0	Pounds.
Mercury	1.0	Pounds.
Toluene	1000.0	Pounds.
Butyl acetate	5000.0	Pounds.
Freon 12	5000.0	Pounds.
Acetone	5000.0	Pounds.
Lead acetate	5000.0	Pounds.
MEK	5000.0	Pounds.
MIBK	5000.0	Pounds.
Silver nitrate	1.0	Pounds.
1,1,1,-Trichloroethane	1000.0	Pounds.
Potassium	100.0	Pounds.
Ammonium hydroxide	1000.0	Pounds.
Sodium hydrochlorite	100.0	Pounds.
Calcium hypochlorite	10.0	Pounds.

In addition to these CERCLA reportable quantities, 25 gallons or more of any petroleum product (oil, grease, diesel, gasoline, anti-freeze) is reportable to NDEP only.

ATTACHMENT 3.
Spill Response Technical Memorandum No. 1
Spill Event

Sylvia Mine Project

(NOTE: Potential health risks caused by human exposure are considered the priority concern. Proximity to watercourses and potential damage to fish and wildlife are a secondary level of concern.)

PURPOSE: The purpose of this memorandum is to establish a definition of a spill event, such that corrective actions can be implemented to facilitate containment and cleanup. The definition covers both chemical (primarily sodium cyanide) and petroleum products. Point of compliance is also addressed. Emphasis is directed to requirements for a corrective action programs. Corrective action measures described in the Spill Prevention & Emergency Response Plan (SPERP) may be terminated once the concentrations of hazardous or deleterious constituents are reduced below their respective criteria limits.

DISCUSSION: A spill event is defined as any major transportation-related discharge of hazardous or deleterious materials (deleterious waste or petroleum products) into or upon waters of the State of Nevada This would include accidental spills (trucking, mixing tank, storage area) and any discharge outside the process tanks and/or defined total containment system to the environment.

Level 1, Minor Spill Event, Discretionary Spill Cleanup involves a spill event resulting in the discharge of a deleterious material or "special waste" (petroleum-based substance) into a surface or ground water, resulting in a concentration temporarily exceeding the recognized state or Federal standards, but where no imminent hazard to human health and safety, or the environment is apparent.

These definitions shall take into account flow conditions, dilution factor, mixing zone and other physical variables, as appropriate. The designated Golden Phoenix Minerals Inc. (GPMI) Spill Response Leader (Project Manager) shall be responsible for and have the authority to determine a Level 1 situation. The requirement for preparation of a formal cleanup plan by the operator and submittal to NDEP/BLM shall be discretionary on his part.

Level 2, Major Spill Event (Mandatory Cleanup Requirements) involves a spill event resulting in the discharge of a deleterious material or "special waste" or oil into a surface water or ground water at a concentration(s) that exceeds recognized state or federal standards for an extended period of time, and poses an imminent hazard to human health and/or the environment.

Under a Level 2 spill event, a formal Cleanup Plan is mandatory. This plan will involve a formal corrective action program which would be developed in the field (onsite) by the involved parties.

Point of Compliance – The designated GPMI Spill Response Leader and NDEP/BLM shall be responsible for defining a "point of compliance" at which the surface water or ground water standards applies, and at which monitoring must be conducted. The point of compliance is a location (surface or vertical) located at the downstream or hydraulically down-gradient limit of the waste management area.

A compliance period may also be designated by the GPMI Spill Response Leader monitoring program, and be completed when the compliance concentration is attained at the defined point of compliance.

CRITERIA: In the event of notification of a spill, the GPMI Spill Response Leader will consider the following criteria in determining the response level and initiating emergency response procedures:

1. Physical and chemical characteristics of the waste including potential for migration in the surface water or ground water system;

2. Quantity of spill or waste stream flow;

3. Current and future use of affected or potentially affected surface or ground water system;

4. Existing quality of surface water or ground water systems (including other sources of contamination and cumulative impacts on water quality);

5. Potential for health risks caused by human exposure to the spill situation;

6. Potential for damage to wildlife, vegetation, and physical structures caused by exposure to waste constituents;

7. Persistence and permanence of potential adverse effects.

COMPLIANCE: With concurrence from and working directly through involved regulatory agencies, the GPMI Spill Response Leader will develop a recognized compliance concentration below which the spill situation will be considered in compliance and cleanup completed. This concentration will be based on pre-existing background levels, recognized quality criteria, and physical conditions in the field.

A monitoring program will be implemented by GPMI under the direct supervision of the Spill Response Leader. Monitoring frequency, sampling and analysis

procedures and statistical evaluation procedures will be developed concurrently with initiation of the field monitoring – the emphasis on immediate action.

The Spill Response Leader will report the results of the detection monitoring program to the designated officials of GPMI, the responsible County Sheriff, BLM official, and NDEP for review and evaluation, along with the formal Cleanup Plan for corrective action necessary to meet the accepted compliance or cleanup concentration limit.

CLEANUP PLAN: Corrective action measures included in the Cleanup Plan must be initiated and completed within an immediate or reasonable period of time, considering the extent of environmental contamination. The action measures under the paragraph may be terminated once the concentration of deleterious or special wastes or oil constituents is reduced to levels below their respective concentration limits described earlier in this memorandum, or determined under the Compliance section above. The Plan must include the following:

- Description of background concentrations and data used to establish these values.
- Volumes of waste, flow rates, and levels of contamination resulting from the spill.
- Methods for monitoring and sampling analysis.
- Concentration limits for cleanup.
- Detailed description of corrective actions to be taken to achieve compliance.
- Proposed schedule for cleanup.
- Responsibilities for signoff of cleanup.

GPMI is responsible for preparing written progress reports to be submitted to the responsible law enforcement, BLM and NDEP officials, which describe and verify the effectiveness of the corrective action program. These reports shall be submitted within 15 days after implementation of the Cleanup Plan. The owner or operator must continue corrective action until the compliance period is over, or the spill is no longer considered a threat to human life or health or fish and wildlife. This will include disposal or decontamination of cleanup equipment and all hazardous waste and residues.

ATTACHMENT 4

SPILL RESPONSE FORMS

ACCIDENTAL CHEMICAL AND PETROLEUM PRODUCTS RELEASES

This appendix provides standard spill reporting and response forms to be used by Golden Phoenix Minerals, Inc. (GPMI) personnel and suppliers in the event of an accidental spill situation. The user should periodically review and update the spill response equipment and materials inventory, such that sufficient quantities are available at all times. The GPMI designated person (Project Manager) will also have additional copies available at the project site.

FORM No. 1 – SYLVIA NEVADA MINE PROJECT STANDARD REPORT FORM FOR ACCIDENTAL CHEMICAL AND PETROLEUM PRODUCT RELEASE

(NOTE: This memorandum sets up a standard format for accidental chemical and petroleum spills. A sufficient supply of the forms shall be kept at the project site. Completion of the response form in total by on-scene personnel is mandatory for a defined spill situation. The completed form must be submitted to the Project Manager for implementation of appropriate clean-up action.)

PURPOSE: The purpose of this memorandum is to provide the approved reporting form for spill events.

I. Date of incident:_____ Time report received:_____a.m./p.m.

Person reporting incident: _____

Address: _____Telephone: _____

Situation (Reporter's): _____

Vehicle identification:_____ Carrier Name: _____

Description of incident: _____

_____

_____

_____

_____

Where: _____

When: _____

Weather: _____

Nearest Dwelling: _____

Nearest Surface Water: _____

Nearest Population Center: _____

Extent of Human Injuries/exposure: _____

_____

Extent Environmental Exposure (Description): _____

_____

II. Materials Involved (type of spill): _____

_____

Type of Container(s): _____

Quantity: _____ Gallons: _____ Barrels: _____ Pounds: _____

Chemical Procedures (Description): _____

_____

_____

_____

_____

Disposal Procedures: _____

_____

_____

Evaluation of Response Procedures: _____

_____

_____

Recommendations of Procedure Update: _____

_____

_____

_____ _____

Signature of Preparer(s) Date

FORM No. 2 – LOGGING AND REPORTING INFORMATION

(NOTE: Logging and reporting requirements were developed for the Golden Phoenix Sylvia Mine Project to provide a detailed record of actions taken in response to a spill event. Environmental sampling procedures are also outlined. These procedures comply with recognized Standard Methods. These procedures must be strictly adhered to in responding to an accidental spill situation.)

PURPOSE: The purpose of this memorandum is to outline accepted logging and sampling procedures for a spill situation.

PROCEDURES:

A. When a spill situation occurs, all events and data should be carefully logged.

B. Records will be kept by the GPMI Project Manager or designee in a special log sheet. The sheet would be kept in a hard-bound book with numbered pages, and all observations and data with respect to times of occurrence and personnel involved recorded.

C. Estimate flow quantity of spill. Use camera (if available) for data record.

D. If sampling is indicated, it should be representative of the problem. This would usually involve:

- Sampling upstream or upgradient of the problem for control.
- Sampling in the problem area where the material is known to exist.
- Obtaining a concentrated sample of the material involved remembering that it may be toxic.
- Obtaining a sample downstream where the fish kill or suspected problem exists.
- Obtaining a sample as far downstream as the “area of impact” appears to occur.
- Observing (and documenting where possible) in all cases the details of terrain, water velocity, water color, bank and bottom characteristics, dead fish, aquatic life changes, etc.

All sampling should be done in compliance with accepted procedures. The GPMI Project Manager should be aware of these procedures, and have available for transport to a spill location as well as at the project site appropriate sampling equipment. Usually, clean (acetone rinsed) glass or polypropylene containers are suitable.

E. Containers should be marked according to type of sample, location, time and any other important data.

F. Usually the samples should be iced, and shipped to the laboratory as expeditiously as possible.

G. Data Sheets must accompany the samples.

All monitoring and testing will be directed by the GPMI Project Manager, in conformance with procedures that are legally definable. The Project Manager will also alert the laboratory so it can prepare for the testing needed. This is particularly important in the case of a NaCN spill.

Special preservation and shipping requirements should be evaluated by the Project Manager prior to actual emergency situations. In general, however, all samples should be shipped iced unless otherwise instructed.

Samplers name: _____

Date of Sample: _____

FORM No. 3 – CLEANUP, MITIGATION AND DISPOSAL

(NOTE: This memorandum outlines specific emergency actions for responding to spill and fire situations at he project site, or materials loading locations. These are presented responses to spills, fires or explosions, and ground water contamination incidents. In the event of a major spill event, a formal corrective action program may be required. This would involve monitoring requirements and a specified compliance period. The overall Response Memorandum and related training will be included in an annual personnel training program on emergency systems.

PURPOSE: The purpose of this memorandum is to identify general cleanup and mitigation/disposal procedures and requirements. More specific actions may be developed by the GPMI Project Manager in the field to meet site specific situations.

PROCEDURES:

A. Cleanup should begin as soon as possible after the material is successfully contained and its danger evaluated. Initially the area will be blocked off (access), and posted.

   Fast action is essential. Oil, for example, may change in character with exposure to air, water and sunlight – its cleanup becoming more difficult with time. Cleanup of NaCN on the other hand, may required that more exposure to natural conditions is provided for. Professional cleanup contractors may also be required.

B. In the case of oils, response may be thick enough to be pumped off. Skimmers, for example may be utilized to pump the material to storage facilities. Sorbents may also be utilized to absorb oil. Examples are straw or hay, sawdust and special sorbent cloth. No perennial surface water exists at the minesite or mill facility. Therefore, sorbents are the preferred response.

Small liquid spills may be cleaned up by dumping spill contents into 30-55 gallon drums and sealing. NaCN containing drums should be treated with an appropriate mixture of hypochlorite (HTH), and reintroduced to the mixing system or hauled from the site for disposal as required. Dry spills should be swept up into a suitable container promptly to minimize exposure to people and the environment. The material should be kept dry. If raining, cover the spill to reduce the solution of sodium cyanide and runoff.

Before any flushing is done, containment devices must be concentrated downstream from the spill. Flushing may only increase the problems and should only be employed where conditions allow or provide for safe cleanup through this method.

C. Heavily contaminated material should be disposed of by an approved method (i.e., potentially hauled to an approved waste disposal facility).

D. Chemical residual oil trapped along streambanks must be removed entirely or the next high water will remove it for you with damaging effects downstream. Grounds or ditch banks contaminated by runoff water should be scraped to a depth of 6 inches, and disposed of with the rest of the debris.

E. This may also require remedial reconstruction or streambank work with accompanying permit requirements.

F. Levels of compliance and “compliance points” for both surface and ground water sources should be predetermined by the GMPI Project Manager and involved agencies

G. Groundwater wells (if available) should be monitored to detect potential contamination. Baseline (pre-spill) information on seasonal ground water level fluctuations and quality should also be collected by the operator.

H. Certain chemicals and in products may be highly flammable and/or explosive. Calcium hypochlorite, for example, will spontaneously ignite and may explode if contaminated by organic substances. This chemical should not be mixed inside the building. Oils will also burn readily and containers may rupture or explode when overheated. This should be kept in mind when responding to fires.

I. Firefighting runoff may be highly toxic. Certain chemicals including cyanide, can be absorbed directly through the skin. All runoff from a fire situation should be directed to an area where containment and potential treatment can be provided.

J. In case of a chemical fire:

- Wear protective clothing over the entire body and have self-contained breathing equipment available on-scene.
- Be checked for poisoning symptoms during the fire. These include headaches, giddiness, blurred vision, coughing, tightness of chest. Also, approach the fire upwind or at right angles. Do not work downwind.
- Be checked for possible poisoning from fumes immediately following getting the fire under control.
- Avoid using larger volumes of water than necessary so that potentially toxic runoff can be kept at a minimum.

K. For cleanup and disposal after a fire:

- Cover the toxic chemical with double its volume of lime. Neutralize runoff water and pump into tanker trucks if available. Excess liquid should be absorbed on lime or sawdust.
- Be sure all cleanup personnel understand potential dangers of spilled material.
- Use mechanized loaders, dump trucks, etc. to minimize human contact.
- Decontaminate tools with hypochloride solution.

L. A final inspection of all cleanup and mitigation/disposal activities will be made by the GMPI Project Manager and responsible officials of involved agencies.

FORM No. 4 – "SIGNING" PROCEDURES FOR SPILL EVENTS.

This section outlines signing procedures for spill situations. Employees, workers and agencies must be made aware of accident situations in a timely manner.

AREA CONTAMINATED
BY CHEMICAL ACCIDENT

Golden Phoenix Minerals, Inc.

Date:_____

Procedures:

1. Twenty-five signs made of heavy paper stock will be kept on hand at the GMPI minesite office.

2. Access to the supply will be approved by GPMI Project Manager, only.

3. In the event of a spill incident, the area will be blocked-off and posted to minimize public access and exposure.

4. Following treatment and exposure, all signs shall be accounted for and collected by the responsible agent, and stored in designated storage area.

The following GPMI Spill Prevention & Emergency Response Plan commits the company to the following resources:

1. two, self-contained breathing apparatus.

2. availability of trained EMT first responder (regularly confirmed).

FORM No. 5 – RESPONSE AUDIT AND PLAN UPDATE SYSTEM

As described earlier in the Spill Prevention & Emergency Response Plan (SPERP), the primary objective is to provide a mechanism whereby spill events can be adequately responded to. This requires that the procedures utilized in such a situation are systematically reviewed and updated as necessary.

The program effectiveness audit which would be conducted for the Sylvia Mine Project involves a two-phased approach. This includes: 1) routine post-event audit; and 2) annual program review and evaluation.

For the purposes of this plan, a "major spill accident" is defined as "any accident involving chemicals resulting in immediate or imminent danger to human or animal life or health, to property, or to the environmental and which requires immediate emergency safety and treatment measures". A minor accident, which would not necessarily demand a full efficiency audit, means "any accident involving chemicals or petroleum products and is not an immediate hazard to people, animals and property".

The routine post-event audit, as presently envisioned, would consist of an "after the event efficiency review workshop session (usually one day) following a major spill accident. All members of the responding team would be involved. All aspects of the accident, including causes and preventative actions, would be reviewed. Special emphasis would be placed on evaluation, response time and effectiveness of actions that occurred immediately following cleanup and final inspection. This would include equipment, manpower, costs and efficiency assessment.

The annual program review would be conducted by Golden Phoenix Minerals, Inc., NDEP and BLM. The evaluation would involve a detailed review of all spill events occurring during the previous operating season. Special emphasis would be directed to the effectiveness of the communication process utilized and line of function responsibilities and need for potential redirection of these responsibilities. The systematic review and update would also evaluate intra/inter-agency communication and coordination needs and effectiveness.